## **AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application.

## **LISTING OF CLAIMS**:

1. (Original) A radio frequency modulator, comprising:

a phase lock loop (PLL) having an input port for receiving a modulation signal and producing as an output signal a modulated RF signal at an output port;

a phase demodulator having an input port for receiving the modulated RF signal and having an output port for providing a phase information signal;

a comparator having a first input port for receiving the phase information signal and a second input port for receiving the modulation signal and an output port for providing an error signal; and

a pre-emphasis filter in response to receiving the error signal adjusts the modulation signal provided to the PLL.

- 2. (Original) A radio frequency modulator as defined in claim 1, wherein the pre-emphasis filter comprises a digital pre-emphasis filter.
- 3. (Original) A radio frequency modulator as defined in claim 1, further comprising a direct digital synthesizer (DDS) coupled between the pre-emphasis filter and the PLL.

TI-32512 -2-

Application No. 10/071,919 Amendment dated November 9, 2005 Reply to Office Action of July 13, 2005

- 4. (Original) A radio frequency modulator as defined in claim 1, wherein the PLL has a transfer function and the pre-emphasis filter preconditions the modulation signal with a filter response which is about the inverse of the PLL transfer function.
- 5. (Original) A radio frequency modulator as defined in claim 1, wherein the phase demodulator comprises a digital phase demodulator.
- 6. (Original) A radio frequency modulator as defined in claim 1, wherein the modulation signal comprises a digital modulation signal.
- 7. (Original) A method of producing a stable and low noise modulator, comprising the steps of:
  - (a) providing a phase lock loop (PLL) for receiving a modulation signal and producing a modulated RF signal;
  - (b) demodulating the modulated RF signal to produce a demodulated signal;
  - (c) comparing the demodulated signal with the modulation signal in order to provide an error signal; and
  - (d) using the error signal to precondition the modulation signal provided to the PLL using a pre-emphasis filter.
- 8. (Original) A method as defined in claim 7, wherein step (d) comprises preconditioning the modulation signal in the digital domain using a digital preemphasis filter.
- 9. (Original) A method as define in claim 7, wherein the PLL has a transfer function and the pre-emphasis filter has a filter response of about the inverse of the PLL transfer function.

TI-32512 -3-

## 10-19. (Canceled).

10. (Currently amended) A digital modulator for use in a radio frequency transmitter, comprising:

a phase-lock-loop (PLL) loop producing as an output signal a modulated RF signal;

a phase demodulator having an input port for receiving unmodified the modulated RF signal and having an output port for providing a phase information signal; and

a comparator having a first input port for receiving the unmodified modulated RF phase information signal and having an output port for providing a outputting an error phase information signal.

- 11. (Previously presented) A radio frequency modulator as defined in claim 1, wherein the modulation signal is subject to a phase delay prior to being input to the second input port of the comparator.
- 12. (Previously presented) A radio frequency modulator as defined in claim 1, wherein the phase lock loop (PLL) comprises a loop filter coupling a phase/frequency detector and charge pump to an oscillator.
- 13. (Previously presented) A radio frequency modulator as defined in claim 12, wherein the loop filter is a low pass filter.

TI-32512 -4-

Application No. 10/071,919 Amendment dated November 9, 2005 Reply to Office Action of July 13, 2005

- 14. (Previously presented) A radio frequency modulator as defined in claim 12, wherein the oscillator is a voltage controlled oscillator (VCO).
  - 15. (Currently amended) A radio frequency (RF) modulator comprising:

a phase-lock-loop (PLL) loop including a loop filter and receiving as an input signal a modulation signal and producing as an output signal a modulated RF signal;

circuitry for <u>receiving unmodified the modulated RF signal and outputting an</u> <u>error signal; and producing an injection modulation signal;</u>

circuitry for injecting the injection modulation signal into the phase lock loop at a point before the loop filter; and

<u>circuitry responsive to said error signal</u> <del>control circuitry, coupled to the circuitry for injecting on the injection modulation signal, for controlling the amplitude of the injection modulation signal.</del>

- 16. (Currently amended) The radio frequency (RF) modulator of claim 15, wherein said control circuitry for receiving unmodified the modulated RF signal and outputting an error signal comprises a phase demodulator coupled to receive the modulated RF signal.
- 17. (Currently amended) The radio frequency (RF) modulator of claim 16, wherein said control circuitry for receiving unmodified the modulated RF signal and outputting an error signal further comprises a comparison circuit coupled to the phase demodulator.

TI-32512 -5-

18. (Previously presented) A method of producing phase shifts in a modulated RF signal, comprising the steps of:

producing an injection modulatedion RF signal;

receiving unmodified the modulated RF signal and outputting an error signal; and

controlling the amplitude of a modulation signal in response to the error signal.

injecting the injection modulation signal into a phase lock loop having a loop filter at a point before the loop filter; and

producing a modulated RF signal as an output-from the phase lock loop.

- 19. (Currently amended) The method of claim 18, further comprising preconditioning the modulation signal in the digital domain prior to injection into the a phase lock loop.
- 20. (Previously presented) The method of Claim 19, wherein a preemphasis filter is used in preconditioning the modulation signal.

TI-32512 -6-